



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

09/592,483

06/09/2000

Robert Cazier

10001921-1

4343

22879

7590

05/24/2004

HEWLETT PACKARD COMPANY  
P O BOX 272400, 3404 E. HARMONY ROAD  
INTELLECTUAL PROPERTY ADMINISTRATION  
FORT COLLINS, CO 80527-2400

EXAMINER

MOE, AUNG SOE

ART UNIT

PAPER NUMBER

2612

DATE MAILED: 05/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/592,483

Applicant(s)

CAZIER ET AL.

Examiner

Aung S. Moe

Art Unit

2612

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on 03 March 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☒ Claim(s) 15 and 16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments with respect to claims 1-14 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-4, 5-8, 9-12, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katoh '430 in view of Kameshima et al. (U.S. 6,271,880).

Regarding claim 1, Katoh '430 discloses a digital imaging system (Fig. 14) comprising: a photo detector (i.e., the solid state image sensor 1404); an analog-to-digital converter to convert the dark current (i.e., col. 4, lines 25-30) from the photo detector (i.e., noted the A/D converter 1406, and col. 7, lines 25+); a processor (i.e., the element 1407) that measures the electric signal representative of the dark current and control the temperature of the photo detector, based on the dark current measurement (i.e., see col. 7, lines 25- col. 8, lines 15).

Furthermore, it is noted that Katoh '430 does not explicitly show that the temperature of the photo detector is calculated based on the dark current measurement as recited present claimed invention.

However, the above-mentioned claimed limitations are well known in the art as evidenced by Kameshima '880. In particular, Kameshima '880 teaches that it is well known to calculate the temperature of the photo detector (i.e., noted the CMOS sensor having an array of photodiodes as shown in Figs. 13 and 15) based on the dark current measurement (i.e., see Figs. 13-15; col. 8, line 35 – col. 9, lines 68).

In view of the above, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Katoh '430 as taught by Kameshima '880, since Kameshima '880 states at col. 4, lines 2+ that such a modification would provide good S/N ratio and free of influence due to the temperature change.

Regarding claim 2, the combination of Katoh '430 and Kameshima '880 discloses use of a CCD sensor (i.e., noted the solid-stated sensor as shown in Fig. 1 of Katoh '430).

Regarding claim 3, the combination of Katoh '430 and Kameshima '880 discloses use of a CMOS sensor (i.e., noted the CMOS sensor having an array of photodiodes as taught in Figs. 13 and 15 of Kameshima '880, thus, it would have been obvious to use such well known CMOS sensor as taught by Kameshima '880).

Regarding claim 4, the combination of Katoh '430 and Kameshima '880 discloses wherein the control of the temperature is done by altering the performance of at least one heat generating component of the digital imaging system (i.e., noted from the Figs. 13-15 of Kameshima '880 that the light source 8 is used to control the temperature, thus, it would have been obvious to modify the digital imaging system as taught by Kameshima '880 for the same reason as discussed above; see col. 8, lines 50+ of Kameshima '880).

Regarding claim 5, since Katoh '430 discloses a digital image system having the step of measuring the dark current of the photo detector and Kameshima '880 teaches the calculation steps for calculating the temperature of the photo detector based on the measured dark current as discussed in claim 1 above, claim 5 is also considered obvious for the same reasons as set forth above for claim 1, thus, please see the Examiner's comment with respect to claim 1 above.

Regarding claim 6, please see the Examiner's comments with respect to claim 4 as discussed above.

Regarding claim 7, the combination of Katoh '430 and Kameshima '880 discloses use of a CCD sensor (i.e., noted the solid-stated sensor as shown in Fig. 1 of Katoh '430).

Regarding claim 8, the combination of Katoh '430 and Kameshima '880 discloses converting the dark current measurement into temperature information (i.e., see col. 8, lines 35 – col. 9, lines 45 of Kameshima '880).

Regarding claim 9, Katoh '430 discloses the step of measuring the dark current of the photo-sensor (1404) at a known temperature and storing the measured dark current for later use (i.e., noted that the dark currents stored in the memory 1410 are based on the known temperature; see col. 7, lines 45+).

Regarding claim 10, the combination of Katoh '430 and Kameshima '880 discloses wherein the processor (i.e., noted the noise correction circuit 1407 of Katoh '430; and the control circuit 6 of Kameshima '880) further control the temperature of at least one component of said digital imaging system based on the temperature (i.e., see col. 7, line 45 – col. 8, lines 35 of Katoh '430; and col. 8, lines 35- col. 9, lines 68 of Kameshima '880).

Regarding claim 11, the combination of Katoh '430 and Kameshima '880 discloses controlling the temperature of at least one component in said digital imaging system (i.e., noted the noise correction circuit 1407 of the digital camera of Katoh '430; and the control circuit 6 of Kameshima '880) based on the calculated temperature (i.e., see col. 7, line 45 – col. 8, lines 35 of Katoh '430; and col. 8, lines 35- col. 9, lines 68 of Kameshima '880).

Regarding claim 12, Katoh '430 discloses a method of operating a digital imaging device (i.e., Fig. 14), said method comprising:

Measuring the first dark current of at least one photo detector (104) with said digital imaging device (i.e., see col. 7, lines 25- col. 8, lines 15); and calculating the temperature of said at least one photo detector (i.e., noted that the temperature detecting circuit 1411 is capable of calculating the temperature of the photo detector 1404; see col. 7, lines 45+); and altering the performance of at least one device associated with the digital imaging device based on the temperature (i.e., col. 7, lines 45 – col. 8, lines 15+ of Katoh '430).

Furthermore, it is noted that Katoh '430 does not explicitly show that the temperature of the photo detector is calculated based on the first dark current measurement as recited present claimed invention.

However, the above-mentioned claimed limitations are well known in the art as evidenced by Kameshima '880. In particular, Kameshima '880 teaches that it is well known to calculate the temperature of the photo detector (i.e., noted the CMOS sensor having an array of photodiodes as shown in Figs. 13 and 15) based on the first dark current measurement (i.e., see Figs. 13-15; col. 8, line 35 – col. 9, lines 68).

In view of the above, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Katoh '430 as taught by Kameshima '880, since Kameshima '880 states at col. 4, lines 2+ that such a modification would provide good S/N ratio and free of influence due to the temperature change.

Regarding claim 14, the combination of Katoh '430 and Kameshima '880 discloses wherein said digital imaging device comprises a shutter (i.e., see Fig. 14, the elements 1402 of Katoh '430), wherein said shutter controls the light received by the at least one photo detector, and wherein said measuring comprises closing said shutter and measuring a first dark current of said at least one photo detector (i.e., see col. 8, lines 65+ of Kameshima '880).

4. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Katoh '430 in view of Kameshima et al. (U.S. 6,271,880) as discussed above and further in view of Thomas et al. (U.S. 6,525,769).

Regarding claim 13, although the combination of Katoh '430 and Kameshima '880 discloses a first photo detector of said at least one photo detector for measuring a first dark current of said first photo detector, the combination of Katoh '430 and Kameshima '880 does not explicitly show that the first photo detector is situated within said digital imaging device so as not to receive light as recite in present claimed invention.

However, the above-mentioned claimed limitations are well known in the art as evidenced by Thomas '769. In particular, Thomas '769 teaches the use of a first photo detector that is situated within the digital imaging device (i.e., noted the sensor 102 as shown in Fig. 1 and 2; see col. 1, lines 15+, col. 3, lines 35+) so as not to receive light, and measuring the first dark current of the first photo detector (i.e., see col. 3, lines 35+ and col. 4, lines 50+).

In view of the above, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Katoh '430 as taught by Thomas '769, since Thomas '769 states at col. 2, lines 5+ that such a modification would provide an accurate reduction of dark current errors in the imaging devices.

***Allowable Subject Matter***

5. Claims 15 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.



***Conclusion***

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

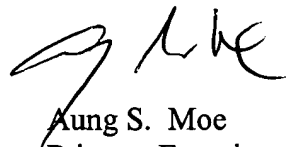
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aung S. Moe whose telephone number is 703-306-3021. The examiner can normally be reached on Mon-Fri (9-5).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on 703-305-4929. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Application/Control Number: 09/592,483  
Art Unit: 2612

Page 9

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Aung S. Moe  
Primary Examiner  
Art Unit 2612

A. Moe  
May 14, 2004